

## REMARKS/ARGUMENTS

### Election/Restriction

The Office withdrew from consideration previously added claims 21-24 as being drawn to a distinct species. However, the office failed to provide any reasoning as to why the claims would be patentably distinct. Moreover, no indication was given as to the presence or absence of a generic claim. It is the applicant's position that (1) the inventive subject matter of claims 21-24 and claims 1-11 do not have a materially different design, mode of operation, function, or effect, and that (2) the inventive subject matter of claims 21-24 and claims 1-11 materially overlap in scope, i.e., are not mutually exclusive. The applicant respectfully requests that the restriction be withdrawn or that the office provides detailed reasoning pursuant to MPEP 806.05(j).

### 35 USC §112, second paragraph

The Office rejected **claims 1-11** as being indefinite under 35 USC §112, 2<sup>nd</sup> paragraph for use of the term "effective" as (a) such term was allegedly not defined by the claim, (b) as the specification allegedly failed to provide a standard for ascertaining the requisite degree, and (c) as a person of ordinary skill in the art would allegedly not have been reasonably apprised of the scope. The applicant respectfully disagrees for various reasons.

With respect to the lack of definition, the applicant notes that the claim expressly recites a "...concentration *effective to provide acidity* to the electrolyte *and to reduce dendrite formation* of the metal during charging...". The metes and bounds of the claimed concentration is therefore clearly defined. Moreover, it is pointed out that *the objected claim term defines a functional limitation*, which is an attempt to define something by what it does, rather than by what it is (e.g., as evidenced by its specific structure or specific ingredients). There is nothing inherently wrong with defining some part of an invention in functional terms. Functional language does not, in and of itself, render a claim improper. *In re Swinehart*, 439 F.2d 210, 169 USPQ 226 (CCPA 1971). For example, it was held that the limitation used to define a radical on a chemical compound as "...incapable of forming a dye with said oxidizing developing agent..." although functional, was perfectly acceptable because it *set definite boundaries* on the patent protection sought. *In re Barr*, 444 F.2d 588, 170 USPQ 33 (CCPA 1971) (*infra*).

With respect to the examiner's argument that the specification allegedly failed to provide a standard for ascertaining the requisite degree, the applicant points to page 9, lines 12-16 of the instant application in which a specific range for such concentration is provided.

Still further, and with regard to the examiner's statement that a person of ordinary skill in the art would allegedly not have been reasonably apprised of the scope, the applicant notes that even with a very low level of skill, the artisan would be able to determine the scope. Specifically, the concentration effective to provide acidity to the electrolyte is readily determined using a pH meter, which is well within the skill set of the ordinary artisan. Likewise, the concentration effective to reduce dendrite formation can be simply determined by visual inspection and/or performance as expressly stated on page 6, lines 10-13 of the instant application. Therefore, the office's reasoning with regard to the rejection of claims 1-11 as being indefinite is improper and should be withdrawn.

### **35 USC §103**

The Office rejected **claims 1-4 and 8-10** as being obvious under 35 USC §103(a) over Palmer (U.S. Pat. No. 3,650,837) in view of Clarke et al. (U.S. Pat. No. 7,214,443). The applicant respectfully disagrees for various reasons.

First, it is noted that amended claim 1 expressly requires that the "...*cathode* comprises a material that allows formation of oxygen during charging, and wherein the material is at least one of a *Magnelli phase titanium suboxide* and *glassy carbon*..." While Clarke indeed teaches that glassy carbon is a suitable material, it is noted that such teaching is with respect to a bipolar electrode, and especially in the context of plating zinc. However, *zinc plating in Clarke's battery occurs at the anode, which is inconsistent with the presently claimed subject matter.*

Second, it should be noted that the entire disclosure and claimed subject matter of Palmer is dependent on the *presence of a biporous cathode* in which electrolyte is displaced from the large-pore portion by oxygen evolved in the small-pore portion to so protect the catalytic layer of the cathode. Replacement of Palmer's composite cathode with Clarke's electrode (which does not provide the biporous character) would directly teach against Palmer, and even render Palmer's device inoperable for its intended purpose. There is absolutely nothing in Palmer that would motivate the person of ordinary skill in the art to replace Palmer's biporous cathode assembly

with the cathode material as presently claimed. Once more, it is critical to Palmer to maintain a biporous structure to so allow formation of an evacuated space to protect the cathode catalyst from oxidation.

Third, it is respectfully pointed out that "...rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. See *Lee*, 277 F.3d at 1343-46; *Rouffett*, 149 F.3d at 1355-59. Such requirement was expressly reiterated in the USPTO memo by M. Focarino stating that "...in formulating a rejection under 35 U.S.C. 5 103(a) based upon a combination of prior art elements, *it remains necessary to identify the reason why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed...*" In the instant case, the office merely stated that it would have been obvious to create the secondary battery of Palmer having the electrolyte solution of Clarke because Clarke teach the electrolyte solution containing methane sulfonic acid will reduce dendrite formation. While it is correct that Clarke teaches that methane sulfonic acid will reduce dendrite formation, the office failed to provide any reasoning as to why the person of ordinary skill in the art would be motivated to make such combination.

Still further, and on a finer point, it is noted that in batteries according to Palmer dendrite formation is not an issue as can be taken, *inter alia*, from column 7, lines 52-54. Clearly, such satisfactory performance fails to support any allegation of presence of dendrites. Therefore, there is no motivation to modify Palmer with the electrolyte according to Clarke. Moreover, the lack of dendrite formation is also not surprising as the zinc concentration in Palmer's batteries is relatively low. Lastly, Palmer rigid bubble barrier will sufficiently protect the separator in the event of unlikely dendrite formation. Based on at least these amendments and arguments, the applicant believes that the rejection of claims 1-4 and 8-10 as being obvious over Palmer in view of Clarke et al. should be withdrawn.

The Office rejected **claim 5** as being obvious under 35 USC §103 over Palmer in view of Clarke et al. and further view of Harada (U.S. Pat. No. 6,428,928). The applicant respectfully disagrees. With respect to the combination of Palmer and Clarke, the same defects and

arguments as provided above apply and are not reiterated here. Harada fails to remedy these defects.

It should be noted that Harada is primarily concerned with solid polymer electrolytes and electrodes, and teaches electrolyte solutions only in the context of preparation of such materials. The examiner's assertion that methane sulfonic acid and polyvinyl sulfonic acid would be equivalent is ill supported. The only common ground between these materials is the presence of a cation/proton exchange group, which act as anion dopants. Therefore, the rejection should be withdrawn.

The Office rejected **claim 6** as being obvious under 35 USC §103 over Palmer in view of Clarke et al. and further view of Awano (JP 57-101359). The applicant once more respectfully disagrees, and with respect to the combination of Palmer/Clarke, the same defects and arguments as provided above apply and are not reiterated here. Awano fails to remedy these defects.

Awano teaches use of brighteners to inhibit dendrite formation, which is contrary to the claimed subject matter (use of *e.g.*, methane sulfonic acid) and as such teaches against use of the claimed compound. The rejection of claim 6 is therefore improper and should be withdrawn.

The Office rejected **claim 7** as being obvious under 35 USC §103 over Palmer, Clarke et al. and Awano, and further view of Popescu (U.S. Pat. No. 4,226,682). The applicant once more respectfully disagrees. With respect to the combination of Palmer/Clarke/Awano, the same defects and arguments as provided above apply and are not reiterated here. Popescu fails to remedy these defects. It is again pointed out that the presently claimed subject matter requires the compound that provides acidity to the electrolyte to also reduce dendrite formation. In contrast, Awano uses specific brighteners, which are further detailed in Popescu. Thus, the combination of references is improper and the rejection should be withdrawn.

The Office rejected **claim 11** as being obvious under 35 USC §103 over Palmer in view of Clarke et al. and further view of Heinke (EP 0 644 275). The applicant once again respectfully disagrees. With respect to the combination of Palmer/Clarke, the same defects and arguments as provided above apply and are not reiterated here. Heinke fails to remedy these defects.

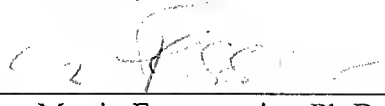
While Heinke teaches use of a Magnelli phase bipolar electrode, the examiner's argument that the substitution of Palmer's electrode with Heinke's electrode and Clarke's electrolyte would be obvious as the reference teaches an essentially even surface for electrochemical purposes fails to have any support. Among other things, the office failed to provide any reason as to why such combination would be motivated. Still further, As Heinke's bipolar electrode is a solid ceramic plate, effective biporous structure (which is critical to Palmer) is not present. Thus, as there is clearly no incentive to modify Palmer with the electrode of Heinke, the rejection is improper and should be withdrawn.

**Request For Allowance**

Claims 1-9, 11, and 21-24 are pending in this application. Claims 12-20 remain withdrawn. The applicant requests allowance of all pending claims.

Respectfully submitted,  
Fish & Associates, PC

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By   
Martin Fessenmaier, Ph.D.  
Reg. No. 46697

Fish & Associates, PC  
2603 Main Street, Suite 1050  
Irvine, CA 92614-6232  
Telephone (949) 253-0944  
Fax (949) 253-9069